

Effects of Long Term Exposure of 900-1800 MHz Radiation Emitted from 2G Mobile Phone on Mice Hippocampus- A Histomorphometric Study.

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Abstract

INTRODUCTION:

The advancement in the telecommunications technology with multi-functional added features in mobile phone, attracts more users of all age group. It is alarming to note that, the mobile phone use has increased amongst children and they are exposed to potentially harmful radiofrequency radiation in their lifetime.

AIM:

To investigate the long term exposure of 900 to 1800 MHz radiations emitted from 2G mobile phone in mice hippocampus at histomorphometric level.

MATERIALS AND METHODS:

With due approval from institutional animal ethics committee, 36 mice were exposed to 2G mobile phone radiation, 48 minutes per day for a period of 30-180 days. The control group was kept under similar conditions without 2G exposure. Mice were sacrificed and the brain was removed from the first month to six months period. Brain was removed from the cranial cavity and hippocampus region was dissected out carefully and processed for routine histological study. Random serial sections were analysed under microscope for histomorphometric changes. For statistical analysis, independent t-test was used for comparing control and 2G exposed groups.

RESULTS:

The mean density of neurons in the hippocampus regions CA1, CA2 and DGDB from first to sixth month was significantly lower in the 2G exposed groups; however, in CA3 and DGVB, the 2G exposed mice showed significantly higher density of neurons. The mean nuclear diameter of neurons in the hippocampus region of CA1, CA2, CA3, DGDB and DGVB from first to sixth months showed lower nuclear diameter in 2G exposed mice.

CONCLUSION:

The long term exposure to 900-1800 MHz frequency radiations emitted from 2G mobile phone could cause significantly reduced neuron density and decreased nuclear diameter in the hippocampus neurons of mice.